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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Michael Kagan

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01/25/2006

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EXAMINER

TANG, KENNETH

ART UNIT

PAPER NUMBER

2195

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/991,692	Applicant(s) KAGAN ET AL.	
	Examiner Kenneth Tang	Art Unit 2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This action is in response to the Amendment filed on 1/3/06. Applicant's arguments have been fully considered but are not found to be persuasive.
2. Claims 1-30 are presented for examination.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 10-15 and 25-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Parthasarathy et al. (hereinafter Parthasarathy) (US 2002/0184392 A1).**

4. As to claim 10, Parthasarathy teaches a method for controlling access by a process (data movement operation and location of data to be moved for processing and/or transportation via a data network, etc., [0004]) on a host device (host system 130, Fig. 2) to a communication network (Fig. 2, 10'), the method comprising:

allocating to the process a plurality of pairs of work queues (work queue pairs) on a channel adapter (host channel adapter or target channel adapter) that couples the host device to

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the network, for use by the process in sending and receiving communications over the network ([0004], [0025],[0031]- [0032], [0062]);

assigning to the process a single doorbell address (addresses) on the adapter (via doorbell manager) for use in accessing any of the plurality of the pairs of work queues (work queue pairs request the translation of address by the address translation interface 714) ([0074] and [0088]);

receiving a work request submitted by the process to the doorbell address to place a work item in one of the allocated queues (work queues) that is specified in the request (*see Abstract, claim 13, [0004], [0074], [0077], [0063] and [0052]*); and

transporting data (data transfer) over the network responsive to the work request (*see Abstract, claim 13, and [0077], [0063] and [0052]*).

5. As to claim 11, Parthasarathy teaches wherein transporting the data comprises verifying (verify and validity), based on the doorbell address to which the request was submitted, that the queue specified in the request was allocated to the process (*see Abstract, [0063] and [0052]*).

6. As to claim 12, Parthasarathy teaches wherein allocating the plurality of pairs of work queues comprises allocating the pairs of work queues to multiple processes on the host device, such that each of the pairs is allocated to a particular one of the processors, and wherein assigning the single doorbell address comprises assigning multiple, respective doorbell addresses to the multiple processes ([0029], [0032], [0049], [0055]).

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7. As to claim 13, Parthasarathy teaches wherein assigning the multiple doorbell addresses comprises assigning a single page in an address space of the host device to each of the processes for use by the processes as the respective doorbell addresses ([0029], [0032], [0049], [0055]).

8. As to claim 14, Parthasarathy teaches wherein assigning the multiple doorbell addresses comprises assigning the addresses using an operating system running on the host device, and wherein receiving the work request comprises receiving the request submitted by the process by means of the operating system, which permits (from validating) each of the processes to write only to its own assigned doorbell address ([0006] and [0046]).

9. As to claim 15, Parthasarathy teaches wherein allocating the pairs of work queues comprises recording a context of each of the pairs in a table accessible to the channel adapter (Translation Protection Table, etc), the context in the table indicating the respective doorbell address of the process to which each of the pairs is allocated, and wherein transporting the data comprises verifying that the doorbell address to which the request was submitted matches the doorbell address indicated by the table for the specified queue (see Abstract, [0034], [0074], [0092]).

10. As to claims 25-30, they are rejected for the same reasons as stated in the rejections of claims 10-15.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**11. Claims 1-9 and 16-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parthasarathy et al. (hereinafter Parthasarathy) (US 2002/0184392 A1) in view of White (US 6,058,425).**

12. As to claim 1, Parthasarathy teaches a method for controlling access by processing running on a host device (host system 130, Fig. 2) to a communication network (Fig. 2, 10'), the method comprising:

assigning to each of the processes a respective doorbell address on a network interface adapter (host-fabric adapter 120 from Fig. 4B) that couples the host device to the network (address translation interface 714 and doorbell manager interface 720, Fig. 7) ([0071]);

by a driver of the network interface adaptor, receiving a request submitted by a given one of the processes to its respective doorbell address, to access one of the allocated service, which is specified in the request (*see Abstract, claim 13, and [0077], [0063], etc.*); and

by the network interface adapter, conveying data (data transfer) over the network (host-fabric), subject to verifying (verify and validity), based on the doorbell address to which the request was submitted (*see Abstract, [0063] and [0052]*).

Parthasarathy fails to explicitly teach allocating a plurality of instances of a communication service on the network, to be provided via the adapter, to at least some of the processes on the host device, such that each of the instances is allocated to a particular one of the processes. However, White teaches multiple TCP/IP instances operating with agents/adapters in a communication system between a client and network (*col. 1, lines 44-67 – col. 2, lines 1-3, col. 8, lines 9-18*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the feature of allocating a plurality of instances of a communication service on the network, to be provided via the adapter, to at least some of the processes on the host device, such that each of the instances is allocated to a particular one of the processes to the existing network communication system of Parthasarathy because this would allow for an improved communication using TCP/IP and with the benefit of allowing multiple copies of a server on a single computer system (*col. 1, lines 32-67, col. 2, lines 16-20*).

13. As to claim 2, modified Parthasarathy teaches wherein assigning the respective doorbell address comprises assigning a single page in an address space of the host device to each of the processes for use thereby as the respective doorbell (*[0029], [0032], [0049], [0055]*).

14. As to claim 3, modified Parthasarathy teaches wherein allocating the instances comprises allocating multiple instances to a single one of the processes, and wherein conveying the data comprises verifying that the specified service instance is one of the multiple instances allocated to the single one of the processes (*Abstract and [0055]*).

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15. As to claim 4, modified Parthasarathy teaches wherein allocating the instances comprises recording a context of each of the instances in a table (Translation Protection Table, etc) accessible to the network interface adapter, the context in the table indicating the respective doorbell address of the process to which each of the instances is allocated, and wherein conveying the data comprises verifying that the doorbell address to which the request was submitted matches the doorbell address indicated by the table for the specified instance ([0034], [0074], [0092]).

16. As to claim 5, modified Parthasarathy teaches wherein recording the context comprises maintaining the table in a memory accessible to the host device, while preventing (if not validated) access by the processes to the table ([0006] and [0046]).

17. As to claim 6, modified Parthasarathy teaches wherein the context further comprises at least a destination address and service type for each of the instances (destination address routing and destination endpoints) ([0029], [0032]).

18. As to claim 7, modified Parthasarathy teaches wherein assigning the respective doorbell address comprises assigning the address using an operating system running on the host device, and wherein receiving the request comprises receiving the request by the given process to write to its respective doorbell address by means of the operating system, which permits (from validating) each of the processes to write only to its own assigned doorbell address ([0006] and [0046]).



19. As to claim 8, modified Parthasarathy teaches wherein the communication service comprises a transport service (transport mechanism) ([0003], [0037], [0040]).

20. As to claim 9, modified Parthasarathy teaches wherein allocating the plurality of the instances comprises allocating pairs of work queues (work queue pairs), and wherein receiving the request comprises receiving a work request to place a work item in a specified one of the work queues, and wherein conveying the data comprises transporting the data to a destination address provided by a context of the specified work queue ([0004], [0025], [0032], [0062]).

21. As to claim 16, Parthasarathy teaches a network interface adapter (host-fabric adapter), for coupling a host device to a communication network (*see Abstract*), the adapter comprising:

a range of doorbell addresses in an address space of the host device (specified address range), such that each of a plurality of processes running on the host device is assigned a respective doorbell address within the range ([0047], [0071]); and

a controller, which is arranged for a communication service provided by the adapter on the network to at least some of the processes on the host device, wherein the adapter receives a request submitted by a given one of the processes to its respective doorbell address to access one of the allocated service, to verify, based on the doorbell address to which the request was submitted, that the allocation to the given process before allowing the adapter, in response to the request, to convey data (data transfer) over the network (host-fabric) using the service (*see Abstract, claim 13, [0035], [0063], [0052], [0077]*);

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22. Parthasarathy fails to explicitly teach allocating a plurality of instances of a communication service on the network, to be provided via the adapter, to at least some of the processes on the host device, such that each of the instances is allocated to a particular one of the processes. However, White teaches multiple TCP/IP instances operating with agents/adapters in a communication system between a client and network (*col. 1, lines 44-67 – col. 2, lines 1-3, col. 8, lines 9-18*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the feature of allocating a plurality of instances of a communication service on the network, to be provided via the adapter, to at least some of the processes on the host device, such that each of the instances is allocated to a particular one of the processes to the existing network communication system of Parthasarathy because this would allow for an improved communication using TCP/IP and with the benefit of allowing multiple copies of a server on a single computer system (*col. 1, lines 32-67, col. 2, lines 16-20*).

23. As to claims 17-24, they are rejected for the same reasons as stated in the rejections of claims 2-9.

### ***Response to Arguments***

24. During patent examination, the pending claims must be “given their broadest reasonable interpretation consistent with the specification.” *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once

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issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969).

25. *Applicant argues on page 8 of the Remarks that “doorbells” in Parthasarathy refers to doorbell managers.*

As shown in the office action, the Examiner equates a doorbell address to be the same as an address because it does the same thing. The broadest reasonable interpretation of the doorbell address is merely an address. Applicant’s specification does not contradict this.

26. *Applicant admits on page 8 of the Remarks that Parthasarathy teaches a device executing a work queue element (WQE) but argues that Parthasarathy does not teach the submission of WQEs to the device process.*

In response, the Examiner respectfully disagrees. In [0004] of Parthasarathy, it discloses the submission (data transfer operation such as send/receive operations) of WQEs between communication devices.

27. *Applicant argues on page 9 of the Remarks that Parthasarathy does not teach allowing the process to control a plurality of queue pairs through a single doorbell address.*

In response, the Examiner respectfully disagrees. Parthasarathy teaches controlling a plurality of queue pairs (two work queue pairs, VI, QP, WQP) through a single address ([0032], [0063], etc.).

28. *Applicant argues on page 10 of the Remarks that the “instances” in White have nothing to do with Work Queue Pairs.*

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "work queue pairs") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth Tang whose telephone number is (571) 272-3772. The examiner can normally be reached on 8:30AM - 6:00PM, Every other Friday off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kt  
1/19/06

  
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